

September 30, 2002

Honorable Kent Conrad
Chairman
Committee on the Budget
United States Senate
Washington, DC 20510

Honorable John M. Spratt, Jr.
Ranking Member
Committee on the Budget
U.S. House of Representatives
Washington, DC 20515

Dear Mr. Chairman and Dear Congressman:

In response to your request of September 20, 2002, the Congressional Budget Office (CBO) has estimated the cost of activities related to possible military operations in Iraq. Estimates of the total cost of a military conflict with Iraq and such a conflict's aftermath are highly uncertain. They depend on many factors that are unknown at this time, including the size of the actual force that is deployed, the strategy to be used, the duration of the conflict, the number of casualties, the equipment lost, and the need for reconstruction of Iraq's infrastructure.

Of the many options being discussed for force structures, CBO examined two representative examples that vary in their emphasis on ground or air forces. Under the assumptions of those examples, CBO estimated that the incremental costs of deploying a force to the Persian Gulf (the costs that would be incurred above those budgeted for routine operations) would be between \$9 billion and \$13 billion. Prosecuting a war would cost between \$6 billion and \$9 billion a month—although CBO cannot estimate how long such a war is likely to last. After hostilities end, the costs to return U.S. forces to their home bases would range between \$5 billion and \$7 billion. Further, the incremental cost of an occupation following combat operations could vary from about \$1 billion to \$4 billion a month.

The attachment to this letter describes the basis for CBO's estimates, which were prepared by Matthew Schmit and David Newman of CBO's Budget Analysis Division; and by Greg Kiley, Paul Rehmus, and Adam Talaber of CBO's National Security Division. If you wish further details, we would be pleased to provide them. CBO's staff contacts are Jo Ann Vines (226-2840) and J. Michael Gilmore (226-2900).

Sincerely,



Dan L. Crippen
Director

Attachment

Honorable Kent Conrad
Honorable John M. Spratt, Jr.
Page Two

cc: Honorable Pete V. Domenici
 Ranking Member

 Honorable Carl Levin
 Chairman
 Committee on Armed Services

 Honorable John W. Warner
 Ranking Member

 Honorable Robert C. Byrd
 Chairman
 Committee on Appropriations

 Honorable Ted Stevens
 Ranking Member

Honorable Jim Nussle
Chairman

Honorable Bob Stump
Chairman
Committee on Armed Services

Honorable Ike Skelton
Ranking Member

Honorable C.W. Bill Young
Chairman
Committee on Appropriations

Honorable David R. Obey
Ranking Member

**Estimated Costs
of a
Potential Conflict with Iraq**

Congressional Budget Office

September 2002

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Summary and Introduction

Estimates of the total cost of a military conflict with Iraq and the conflict's aftermath are highly uncertain and depend on many unknown factors including the actual force size deployed, the duration of the conflict, the strategy employed, the number of casualties, the equipment lost, and the need for reconstruction of Iraq's infrastructure. Of the many force-level options being discussed, CBO examined two representative examples. Both alternatives are based to some extent on the forces that the Department of Defense (DoD) had previously indicated it would require for a major theater war. Using those forces, CBO employed various methods to develop its estimates. As appropriate, it used cost data from prior and current military operations—most notably, the operations in the Balkans, Afghanistan, and Desert Shield/Desert Storm. In addition, CBO estimated costs using categories similar to those in DoD's annual reports on the Overseas Contingency Operations Transfer Fund—personnel and personnel support, operations support, and transportation.

Under the assumptions incorporated in its examples, CBO estimates that the incremental costs of deploying a force to the Persian Gulf would be between \$9 billion and \$13 billion. (See the explanation below of "incremental costs.") Prosecuting a war would cost between \$6 billion and \$9 billion a month—although how long such a war may last cannot be estimated. After hostilities end, the costs to return U.S. forces to their home bases would range between \$5 billion and \$7 billion, CBO estimates. Further, the incremental cost of an occupation following combat operations would vary from about \$1 billion to \$4 billion a month. The estimates of monthly costs incorporate no assumptions about the duration of the conflict or the occupation. And CBO has no basis for estimating any costs for reconstruction or for foreign aid that the United States might choose to extend after a conflict ends.

The first of CBO's examples emphasizes ground forces. Called the Heavy Ground option in this report, it includes about five U.S. Army divisions and five U.S. Air Force tactical fighter wings. The second option relies more on air power. Termed the Heavy Air option, it comprises two and one-third U.S. Army divisions and 10 U.S. Air Force tactical fighter wings. (Details of the options are displayed in Tables 1 and 2.) CBO estimates that the cost of deploying the Heavy Ground force to the Persian Gulf would be about \$13 billion; after that, the incremental cost of prosecuting a war in Iraq would reach just over \$9 billion during the first month of combat and subsequently fall to about \$8 billion a month (see Table 3). Similarly, the cost of deploying the Heavy Air force to the Persian Gulf would be \$9 billion, and the incremental cost of prosecuting a war would reach \$8 billion during the first month of combat and then fall to \$6 billion a month (see Table 4). Eventually, forces deployed to the conflict from other locations would return to their home stations. CBO estimates that the costs to redeploy those forces would be approximately \$7 billion for the Heavy Ground force and \$5 billion for the Heavy Air force.

CBO's estimates represent the incremental costs that DoD could incur above the budgeted cost of routine operations. As a result, the estimate excludes items such as the basic pay of active-duty military personnel but includes the monthly pay for reservists recalled to full-time duty. Similarly, the estimates reflect only the costs of aircraft flying hours and ship steaming days above those normally provided in DoD's regular appropriations. CBO has no basis for estimating the number of casualties from the conflict or for analyzing the effects of Iraq's possible use of weapons of mass destruction; thus, the estimates in this report exclude those considerations. Neither is there a basis for estimating the costs associated with activities conducted under the National Foreign Intelligence Program because the details of its activities are highly classified.

CBO's Assumptions About Forces

As the basis for its estimates, CBO assumed that forces would be significantly smaller than those DoD has previously proposed for fighting a major theater war (MTW). In DoD's plans, an MTW force included about five active Army divisions, 10 Air Force tactical fighter wings, five to six Navy aircraft carriers with associated support ships, and one to two Marine Corps expeditionary forces (MEFs).¹ In its estimate, CBO examined one option that emphasizes ground forces—Heavy Ground—and another that relies more on air forces—Heavy Air (see Tables 1 and 2); both of those options are subsets of the MTW force, and both are significantly smaller than the forces used to fight the Desert Storm campaign.

The Heavy Ground Option. In estimating costs for this option, CBO assumed the use of five Army divisions, but limited tactical air forces to half of those planned for an MTW, or about five wings, on the assumption that the bases available to U.S. and allied air forces might be limited or that extensive use of precision munitions might make the use of a smaller number of aircraft feasible. CBO also assumed that this force would include one MEF. In total, CBO estimates, the U.S. force would include about 370,000 military personnel deploying to the Persian Gulf region (270,000 active-duty service members and 100,000 reserves). About another 70,000 reserves would be required to fill stateside and other positions left vacant by deploying active-duty troops. The U.S. force would also comprise up to 1,500 aircraft, 800 attack and transport helicopters, 800 tanks, and 60 battle force ships.

Which allied forces might participate in a conflict with Iraq is uncertain; only the British have thus far indicated their intention to contribute troops. Thus, CBO assumed that two-thirds of a British heavy armored division and two-thirds of a British air wing would

1. A Marine expeditionary force consists of one Marine division and one Marine air wing.

be part of the Heavy Ground force, as well as a British naval contingent of 21 ships, as in Desert Storm. CBO's estimates of the costs incorporate the assumption that the United States will provide limited logistical support to those forces similar to the support it provided during Desert Storm.

The Heavy Air Option. In its estimates of an option emphasizing air forces, CBO limited U.S. Army forces to two and one-third divisions and increased the number of tactical air wings to 10. That force structure assumes an increased reliance on air power to compensate for the smaller ground force. For this option, CBO assumed the use of about one-third of a MEF. In total, CBO estimates, the U.S. force would include about 250,000 military personnel deploying to the Persian Gulf region (200,000 active-duty service members and 50,000 reserves). Another 55,000 reserves would be required to fill stateside and other positions left vacant by deploying active-duty troops. The Heavy Air force would also comprise up to 2,500 aircraft, 500 attack and transport helicopters, 300 tanks, and 60 battle force ships.

CBO assumed that one-third of a British heavy armored division and one British air wing would be part of the Heavy Air force, as would the same British naval contingent of 21 ships assumed for the Heavy Ground estimate. Again, the United States would provide limited logistical support to those forces similar to the support provided during Desert Storm.

Incremental Costs for Deploying and Operating Forces

Detailed below are CBO's estimates of the incremental costs for operations by the two representative force structures during both the potential conflict in Iraq and its aftermath.

The Heavy Ground Option. CBO estimates that building up and deploying a U.S. force composed of approximately five Army divisions, approximately five Air Force wings, five Navy aircraft carriers with associated escort and support ships, and one Marine Corps expeditionary force would cost almost \$13 billion over a three-month deployment phase. For that phase, costs for operations support constitute 43 percent of the estimate, or over \$5 billion (see Table 3). Operations support includes the costs associated with operating and maintaining all air, land, and sea forces assembled in the region before the conflict commences; the costs associated with the incremental increase in flying hours and steaming days, such as the costs for increased fuel consumption and repair parts; the costs of equipping and maintaining ground troops and purchasing equipment; and the costs associated with command, control, communications, and intelligence.

Costs for personnel and personnel support during the deployment phase constitute another 34 percent of the estimate's total, or \$4 billion; they include the costs for reserve personnel called to active duty as well as special payments, such as hazardous-duty pay, for both reserve and active-duty personnel. Costs for transporting troops and equipment into the theater would be \$3 billion, or 22 percent of the estimate, and are based on tonnage levels and costs for Desert Shield and Desert Storm, and DoD's planning factors for supplies associated with each deployed soldier. In addition, they take into account the personnel, equipment, and supplies already in and around the Persian Gulf.

CBO estimates that once combat begins, the costs for prosecuting the war, including the cost to replace expended munitions and damaged or destroyed equipment, would total \$9 billion over the first month of combat. The costs associated with replacing expended munitions account for 41 percent of that estimate. The cost of operations support (less the cost of expended munitions) accounts for 36 percent; personnel, personnel support, and transportation costs account for another 23 percent. CBO assumes that in the first month of the conflict, 50 percent of the targets assigned to aircraft would be attacked with precision-guided munitions, such as the Joint Direct Attack Munition (JDAM). CBO assumes that in the second and subsequent months of combat, 10 percent of the targets would be attacked using precision munitions. The war's monthly cost would in turn decline by almost 20 percent, to \$8 billion a month.

At the end of hostilities, the cost to return the Heavy Ground force units to their home bases would be about \$7 billion, CBO estimates. That figure includes the cost of returning about 25 percent of the total tonnage of equipment and supplies shipped to the region (after accounting for the fuel and ammunition consumed during the conflict) and all of the personnel initially sent to the area. On the basis of DoD's experience in Desert Storm, CBO assumed that the redeployment phase would last about three months. The costs for personnel and personnel support and for operations support for that period are estimated at \$4 billion and \$2 billion, respectively.

The Heavy Air Option. CBO estimates that building up and deploying a U.S. force composed of two and one-third Army divisions, 10 Air Force tactical air wings, five Navy aircraft carriers with associated support ships, and about one-third of a Marine expeditionary force would cost \$9 billion. For the deployment phase, costs for operations support constitute 48 percent of that estimate, or \$4 billion (see Table 4). Personnel and personnel support costs account for another \$3 billion (31 percent), and transportation costs account for the remaining \$2 billion (21 percent).

CBO estimates that once combat begins the costs for prosecuting the war, including the cost to replace expended munitions and damaged or destroyed equipment, would total about \$8 billion over the first month of combat. The costs associated with replacing expended munitions represent 45 percent of that estimate. The cost of operations support (less the cost of expended munitions) accounts for 36 percent; personnel, personnel support, and transportation costs account for another 19 percent. CBO again assumed that 50 percent of the targets assigned to aircraft in the early phase of combat would be attacked with precision munitions. In the second and subsequent months, CBO assumed, 10 percent of the targets would be attacked using precision munitions, and the war's monthly cost would decline by about 20 percent, to \$6 billion a month.

At the end of hostilities, the costs to redeploy the Heavy Air force would total about \$5 billion. Included in that estimate are the costs for returning about 25 percent of the total tonnage of equipment and supplies shipped to the region (after accounting for the fuel and ammunition consumed) and all of the personnel initially sent to the area. As it did for the Heavy Ground option, CBO assumed that the redeployment phase would last about three months. The costs for personnel and personnel support and for operations support for that period are estimated at \$3 billion and \$1 billion, respectively.

Occupation. The costs associated with an occupation force for Iraq remain highly uncertain, varying from about \$1 billion to \$4 billion a month, depending on the assumptions used about force size and operations. Some military experts suggest that a force of up to 75,000 peacekeepers might be needed; another plan discussed by the U.S. Central Command calls for up to 200,000 troops. For its estimate, CBO used an average cost for a U.S. Army peacekeeper consistent with experiences in Bosnia and Kosovo, and assumed that U.S. force levels would range between 75,000 and 200,000 troops. It also assumed that replacement occupation personnel and equipment would be periodically rotated to the theater in a manner similar to that used in recent peacekeeping activities. However, current Army forces would be unable to support those rotations for a prolonged 200,000-person occupation.

Costs for an occupation could be significantly higher if that operation included the construction of bases, bridges, and roads. On the other hand, if the United States limited its role to providing logistical support to another country's peacekeeping forces, costs for an occupation could be significantly lower.

Uncertainties and Unknowns

Estimates of the total cost of a military conflict with Iraq and such a conflict's aftermath are highly uncertain. For example, many other force structures—both smaller and larger than the two examples CBO used in its estimates—could be fielded. A plausible, larger U.S. force might be composed of the ground forces assumed in the Heavy Ground option and the air forces assumed in the Heavy Air option. Such an alternative force would approach the strength of DoD's MTW force (discussed earlier), but would still be smaller than the force used for Desert Storm. The personnel associated with that larger force would number 470,000; its deployment and monthly operations costs would be greater than any of the costs displayed in Tables 3 and 4.

Whatever forces are used, unknown factors abound in considering how a conflict with Iraq would actually unfold. On the one hand, if the Iraqi leadership or selected elements of its military forces quickly capitulated, ground combat could be of short duration, as in Desert Storm. On the other hand, if the leadership and military chose to fight, Iraq's use of chemical or biological weapons (CBW) against regional military or transportation facilities could extend the war, as could the need to engage in protracted urban fighting. Given those uncertainties, CBO's estimates of the monthly costs of operations exclude expenditures for decontaminating areas or equipment affected by CBW attacks. CBO also has not attempted to estimate the number of potential casualties, including those that might result from the enemy's use of CBW or from protracted urban fighting.

A war could lead to substantial costs in later years that are not included in CBO's estimates, either because their magnitude could not be assessed even roughly or because they depend on highly uncertain decisions about future policy. The United States might leave troops or equipment in Iraq, which could require the construction of new military bases. Sustaining the occupation over time could require either increases in active-duty and reserve end strength or major changes in current policies on basing and deployment. The United States might provide Iraq with funds for humanitarian assistance and reconstruction. Aid could be provided in the future to allies and other friendly nations in the region, and levels of assistance could be substantial.

Some analysts have speculated that the proceeds from Iraqi oil sales could be used to offset the costs of reconstruction and occupation. However, Iraq is already a major exporter of oil and until recently has been producing at close to its peak sustainable

production capacity of 2.8 million barrels a day (BPD).² Currently, about 80 percent of Iraq's oil production is being used to purchase imports under the United Nations Oil for Food Program or for domestic consumption. And, in the near term, Iraqi oil exports cannot be expanded without large-scale investment and development of infrastructure. Thus, the primary source of additional funds for reconstructing Iraq would be the proceeds from the legitimate sale of the approximately 400,000 BPD that are currently smuggled out of the country to pay for the importation of items that violate United Nations sanctions.³ Assuming that a postconflict Iraq complied with all U.N. resolutions and removed the basis for the current economic sanctions, and assuming also that its oil production infrastructure was undamaged, Iraq could pay for reconstruction costs by using funds generated from that 400,000 BPD of oil and still have enough to pay for its country's current level of imports. At today's oil prices, production at that level would amount to approximately \$3 billion a year.

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2. According to data from the Department of Energy's Energy Information Administration and the Organization of Petroleum Exporting Countries (in its *Annual Statistical Bulletin*, Washington, D.C., 2000), Iraq produced an average of 2.8 million BPD in 2000 and 2.4 million BPD in 2001. Its peak surge capacity is about 3.1 million BPD.
 3. Oil is smuggled through Syria (180,000 to 250,000 BPD); Jordan (75,000 to 110,000 BPD); Turkey (40,000 to 80,000 BPD); and other Persian Gulf states (30,000 to 40,000 BPD). See General Accounting Office, *Weapons of Mass Destruction: U.N. Confronts Significant Challenges in Implementing Sanctions against Iraq*, GAO-02-625 (Washington, D.C., May 2002).

TABLE 1. UNITED STATES FORCES USED IN DESERT STORM AND ASSUMED FOR CBO'S HEAVY GROUND AND HEAVY AIR OPTIONS

Major Force Element	Desert Storm	Heavy Ground	Heavy Air
Army Divisions ^a	7 $\frac{2}{3}$	5 $\frac{1}{3}$	2 $\frac{1}{3}$
Marine Corps Divisions ^a	2 $\frac{2}{3}$	1	$\frac{1}{3}$
Marine Air Wings	1	1	1
Navy Carrier Air Wings	6	5	5
Navy Carrier Battle Groups ^b	6	5	5
Navy Amphibious Ready Groups ^b	7 ^c	1	1
Navy Surface Action Groups ^b	2	1	1
Air Force Fighter Wings ^d	9 $\frac{2}{3}$	5 $\frac{1}{3}$	10
Air Force Bombers	65	72	72

SOURCE: Congressional Budget Office.

- Fractions of divisions represent additional brigade-sized elements (armored cavalry regiments or Marine expeditionary brigades) that would be deployed with combat divisions.
- By the end of Desert Storm, more than 100 Navy battle force ships had participated in that conflict. For both the Heavy Ground and Heavy Air options, CBO estimates that the United States would deploy 60 Navy battle force ships.
- During Desert Storm, Navy amphibious forces were not organized into amphibious readiness groups (ARGs). Thirty-one amphibious ships participated in Desert Storm, carrying two Marine expeditionary brigades and one Marine expeditionary unit. That total is roughly equivalent to 7 ARGs as they are organized today.
- Air Force deployment levels are measured in tactical fighter wing equivalents (TFEs). Each TFE represents a force with sufficient aircraft to ensure that 72 combat planes can be sustained and supported. Fractional numbers of TFEs represent additional squadron-sized elements (24 combat aircraft sustained and supported). Marine air wings and carrier air wings are not directly comparable with Air Force TFEs because of differences in size and composition.

TABLE 2. UNITED STATES PERSONNEL ASSOCIATED WITH DESERT STORM AND ESTIMATED FOR CBO'S HEAVY GROUND AND HEAVY AIR OPTIONS (In thousands)

Service	Desert Storm	Heavy Ground	Heavy Air
Army			
Active	206	125	55
Reserve	99	88	38
Subtotal	305	213	93
Marine Corps			
Active	87	40	25
Reserve	6	5	0
Subtotal	93	45	25
Navy			
Active	84	63	63
Reserve	1	0	0
Subtotal	85	63	63
Air Force			
Active	47	26	47
Reserve	10	8	13
Subtotal	57	34	60
Special Operations Forces ^a	N.A.	12	12
Total Personnel Deployed			
Active	424	266	202
Reserve	116	101	51
All Personnel	540	367	253
Reserve Backfill ^b	115	72	55
Total Personnel Required			
Active	424	266	202
Reserve	231	173	106
All Personnel	655	439	308

SOURCE: Congressional Budget Office.

NOTE: N.A. = not available.

- a. Special-operations forces (SOF) personnel are not displayed by service for the Heavy Ground and Heavy Air options because all SOF forces are managed, funded, and provided by Special Operations Command.
- b. Personnel required for backfill would not deploy to the theater of operations but would instead fill stateside or other positions left vacant by deploying active-duty troops.

TABLE 3. ESTIMATED COSTS OF DEPLOYMENT TO, COMBAT OPERATIONS IN, AND OCCUPATION OF IRAQ: HEAVY GROUND FORCE OPTION (In billions of 2003 dollars)

Cost Element	Deployment (Three months)	First Month of Combat ^d	Subsequent Months of Combat ^e (Per month)	Redeployment (Three months)	Occupation (Per month)
Personnel and Personnel Support ^a	4.3	1.4	1.4	4.3	n.a.
Operations Support ^b	5.4	7.1	5.4	1.5	n.a.
Transportation ^c	<u>2.8</u>	<u>0.7</u>	<u>0.7</u>	<u>1.5</u>	n.a.
Total	12.5	9.2	7.5	7.3	1.4 to 3.8 ^f

SOURCE: Congressional Budget Office.

NOTE: n.a. = not applicable.

- a. "Personnel" includes pay for reserve personnel called to active duty as well as special payments, such as hazardous duty pay, for both reserve and active-duty personnel. The category also covers subsistence items, such as food and water. CBO's estimate also includes those costs for reserve and National Guard personnel called to active duty in support of the Persian Gulf operations and to fill in for positions left vacant by troops deploying to the Gulf. "Personnel support" includes clothing and personal items as well as medical support.
- b. This category includes all incremental costs related to the operation and maintenance of air, land, and sea forces involved in the Persian Gulf conflict. It includes costs associated with the incremental increase in flying hours and steaming days, such as costs for increased fuel consumption and repair parts. Operations support also includes the costs of equipping and maintaining ground troops and purchasing equipment, as well as the costs associated with command, control, communications, and intelligence. In addition, the category covers force reconstitution, which includes the replacement of munitions stocks and repair or replacement of damaged equipment—and the incremental cost of increased depot maintenance for items such as aircraft, tanks, and ships.
- c. "Transportation" includes the cost of moving personnel and equipment to the theater of operations from the continental United States and from bases around the globe. Those costs are incurred by the U.S. Transportation Command, which operates DoD's heavy-lift aircraft, Navy sealift, and contracts for commercial air and shipping.
- d. CBO assumes that in the first month of combat, 50 percent of the targets will be attacked by precision-guided munitions (PGMs).
- e. CBO assumes that if combat operations continue beyond one month, 10 percent of the targets would be attacked by PGMs.
- f. This estimate is based on an average cost per U.S. Army peacekeeper for occupation forces ranging from 75,000 to 200,000 peacekeepers. The estimate could be significantly larger if the occupation included heavy construction, such as building bases, bridges, and roads. If the United States limited its role to providing logistical support to other nations' occupying forces, costs could be significantly lower.

TABLE 4. ESTIMATED COSTS OF DEPLOYMENT TO, COMBAT OPERATIONS IN, AND OCCUPATION OF IRAQ: HEAVY AIR FORCE OPTION (In billions of 2003 dollars)

Cost Element	Deployment (Three months)	First Month of Combat ^d	Subsequent Months of Combat ^e (Per month)	Redeployment (Three months)	Occupation (Per month)
Personnel and Personnel Support ^a	2.7	0.9	0.9	2.7	n.a.
Operations Support ^b	4.2	6.2	4.7	1.1	n.a.
Transportation ^c	<u>1.9</u>	<u>0.5</u>	<u>0.5</u>	<u>1.0</u>	<u>n.a.</u>
Total	8.8	7.6	6.1	4.8	1.4 to 3.8 ^f

SOURCE: Congressional Budget Office.

NOTE: n.a. = not applicable.

- a. "Personnel" includes pay for reserve personnel called to active duty as well as special payments, such as hazardous duty pay, for both reserve and active-duty personnel. The category also covers subsistence items, such as food and water. CBO's estimate also includes those costs for reserve and National Guard personnel called to active duty in support of the Persian Gulf operations and to fill in for positions left vacant by troops deploying to the Gulf. "Personnel support" includes clothing and personal items as well as medical support.
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- c. "Transportation" includes the cost of moving personnel and equipment to the theater of operations from the continental United States and other bases around the globe. Those costs are incurred by the U.S. Transportation Command, which operates DoD's heavy-lift aircraft, Navy sealift, and contracts for commercial air and shipping.
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